Tumor Grade

Tumor grade is one of many factors that doctors consider when they develop an individual treatment plan for a cancer patient. Tumor grade refers to the degree of abnormality of cancer cells compared with normal cells.

The body is made up of many types of cells. Normally, cells grow and divide to produce new cells in a controlled and orderly manner. This controlled cell division is the process that heals wounds and replaces aging tissues. Sometimes, however, new cells continue to be produced when they are not needed. As a result, a mass of extra tissue called a tumor may develop. A tumor can be benign (not cancerous) or malignant (cancerous). Cells in malignant tumors are abnormal and grow without control or order. These cancerous cells can invade and destroy the tissue around them and spread.

If a tumor is suspected to be malignant, a doctor removes a sample of tissue or the entire tumor in a procedure called a biopsy. From the biopsy, a pathologist (a doctor who identifies diseases by studying cells under a microscope) can determine whether the tumor is benign or malignant. The pathologist can also identify other characteristics of the tumor cells, including tumor grade and the degree of cell differentiation.

The term "differentiated" describes the extent to which cancer cells are similar in appearance and function to healthy cells of the same tissue type. The degree of differentiation often relates to the clinical behavior of the particular tumor. Grade is a classification system used

by pathologists to describe the degree of differentiation of tumor cells. Based on the microscopic appearance of cancer cells, pathologists commonly describe tumor grade by four degrees of severity: Grades 1, 2, 3, and 4. The cells of Grade 1 tumors are often well-differentiated or low-grade tumors, and are generally considered the least aggressive in behavior. Conversely, the cells of Grade 3 or Grade 4 tumors are usually poorly differentiated or undifferentiated high-grade tumors, and are generally the most aggressive in behavior.

The American Joint Commission on Cancer has recommended the following guidelines for grading tumors:

Grade	
GX	Grade cannot be assessed (Undetermined grade)
G1	Well-differentiated (Low grade)
G2	Moderately well-differentiated (Intermediate grade)
G3	Poorly differentiated (High grade)
G4	Undifferentiated (High grade)

Although grade is used by pathologists to describe most types of cancer, its importance in planning treatment and estimating the future course and outcome of disease (prognosis) is greater for certain types of cancers, such as soft tissue sarcoma, primary brain tumors, lymphomas, and breast and prostate cancer.

Some cancers also have special grading systems. For example, pathologists use the Gleason system to describe the degree of differentiation of prostate cancer cells. The Gleason system uses scores ranging from Grade 2 to Grade 10. Lower Gleason scores describe well-differentiated, less aggressive tumors. Higher scores describe poorly-differentiated, more aggressive tumors.

It is important for physicians and patients alike to know as much as possible about a cancer's grade and stage because both the extent to which the disease has progressed (stage), and its microscopic features (grade) are important factors in planning treatment and estimating a

patient's prognosis. Patients should discuss questions about tumor grade and how it relates to their diagnosis and treatment with their doctor.

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Sources of National Cancer Institute Information

Cancer Information Service

Toll-free: 1–800–4–CANCER (1–800–422–6237)
TTY (for deaf and hard of hearing callers): 1–800–332–8615

NCI Online

Internet

Use http://www.cancer.gov to reach NCI's Web site.

CancerMail Service

To obtain a contents list, send e-mail to cancermail@icicc.nci.nih.gov with the word "help" in the body of the message.

CancerFax® fax on demand service

Dial 301–402–5874 and listen to recorded instructions.

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